

## ROTATION AND TRANSLATION MEASUREMENT

## ABSTRACT

5 A position determining system (PDS)(100) or multiple parameters measurement system  
(MPMS)(300) particularly useful for translation and rotation measurement of objects having up  
to five degrees of freedom. A light source (122, 302) provides light beams (124, 304) into at least  
two channels. Each channel may include an interferometer (310), reflective target (110, 314),  
beam splitter (128, 312), detector (132, 316), and receiver (318). In concert, the detectors (132,  
10 316) sense horizontal, vertical, and roll position and the receivers (318) sense longitudinal and  
yaw position change. Optionally, modulation can be imposed on the light beams (124, 304) and  
phase-sensitive synchronous demodulation used to enhance accuracy.

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